

Program Requirements Document Companywide	11.1 TEST CONTROL	Identifier: PRD-5082 Revision: 3 Page: 1 of 8
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Manual: 13A—Quality and Requirements
Management Program Documents

Change Number: 87942

1. PURPOSE

This Program Requirements Document (PRD) identifies requirements and responsibilities for planning and executing *tests* (see def.) that are used to *verify* (see def.) conformance of an *item* (see def.) to specified requirements, or to demonstrate satisfactory performance for service. See Appendix A for requirements basis.

2. APPLICABILITY

This PRD applies to company organizations involved in performing tests such as prototype *qualification tests* (see def.) production tests, proof tests, construction tests, operational and preoperational tests, factory and site *acceptance tests* (see def.), and in-use tests.

Computer program test requirements are identified in PRD-5092, 19.1 Software Quality Assurance.

3. RESPONSIBILITIES

3.1 Organizations Performing Tests

Organizations performing tests are responsible for:

- A. Preparing test procedures, procedure change requests, or equivalent test planning documentation.
- B. Preparing data collection and/or data sheets (as required).

3.2 Design Organization

The design organization is responsible for:

- A. Providing and approving test requirements and *acceptance criteria* (see def.).
- B. Identifying the individual or organization who is responsible for independent *verification* (see def.) of test results/data.
- C. Evaluating and accepting the test results/data that are generated by the test.

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- D. Providing final disposition of test results/data.
- E. Initiating a *nonconformance* (see def.) or *deficiency* (see def.) report if test results do not meet specified acceptance criteria.
- F. Notifying all organizations affected by the nonconformance (for example, QA, organizations using the item, etc.).
- G. Approving changes to test procedures.

3.3 Organization or Personnel Performing Independent Verification

The verifying organization or personnel performing independent verification is/are responsible to see that test data and results are collected in accordance with test procedures and accurately recorded.

4. REQUIREMENTS

4.1 Companywide Applications

The requirements identified in this subsection (4.1) apply to the entire company unless exempted by INT-17, QA PRD Introduction, Subsection 2.

4.1.1 Basic

- 4.1.1.1 Tests required to collect data (such as for siting or *design input* [see def.]), to verify conformance of an item or computer program to specified requirements, or to demonstrate satisfactory performance for service shall be planned and executed. [NQA-1-1997, Requirement 11, 100 1s]
- 4.1.1.2 Required tests, including, as appropriate, prototype qualification tests, production tests, proof tests prior to installation, construction tests, preoperational tests, operational tests, computer program tests such as software design verifications, factory acceptance tests, site acceptance tests, and in-use tests shall be controlled. [NQA-1-1997, Requirement 11, 200(a) 2s]

4.1.2 Test Requirements

NOTE: See PRD-5092, 19.1 Software Quality Assurance, for computer program test procedure requirements

- 4.1.2.1 Test requirements and acceptance criteria shall be provided or approved by the responsible design organization. [NQA-1-1997, Requirement 11, 200(a) 1s; DOE/RW-0333P 11.2.2.C]

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- 4.1.2.2 Test requirements and acceptance criteria shall be based upon specified requirements contained in applicable design documents or other pertinent technical documents that provide approved requirements. *[NQA-1-1997, Requirement 11, 200(b); DOE/RW-0333P 11.2.2.D]*
- 4.1.2.3 If temporary changes to the approved *configuration* (see def.) of a facility are required for testing purposes, *approval* (see def.) by the design authority is required prior to performing the test. *[NQA-1-1997, Requirement 11, 200(c)]*
- 4.1.2.4 The tests performed shall obtain the necessary data with sufficient accuracy for evaluation and acceptance. *[NQA-1-1997, Requirement 11, 200(a) 4s]*

4.1.3 Test Planning

- 4.1.3.1 Required tests shall be performed and documented in accordance with approved written procedures, work packages, or data sheets. *[Company Imposed Requirement]*
- 4.1.3.2 The test procedure or equivalent test planning documentation shall be prepared by the testing organization. *[Company Imposed Requirement]*
- 4.1.3.3 Test procedure reviews shall be documented and comments dispositioned and resolved prior to final review and approval by the responsible organization(s). The organization responsible for performing the test shall be responsible for obtaining the approval of test procedures and authorization for a test activity. *[Company Imposed Requirement]*
- 4.1.3.4 Test planning shall include *[DOE/RW-0333P 11.2.1.1s]*:
 - A. Identification of the implementing documents to be developed to control and perform tests. *[DOE/RW-0333P 11.2.1.A]*
 - B. Identification of item to be tested and the test requirements and acceptance limits, including required levels of precision and accuracy. *[DOE/RW-0333P 11.2.1.B]*
 - C. Specification of *characteristics* (see def.) to be tested, test methods to be employed, and instructions for performing the test. *[NQA-1-1997, Requirement 11, 100 2s; DOE/RW-0333P 11.2. 1.C]*
 - D. Test prerequisites that address calibrated instrumentation, appropriate and adequate test equipment and instrumentation, trained personnel, condition of test equipment and the item to

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be tested, suitably controlled environmental conditions, and provisions for data acquisition. [DOE/RW-0333P 11.2.1.D; NQA-1-1997, Requirement 11, 200(a) 3s]

- E. Mandatory hold points. [DOE/RW-0333P 11.2.1.E]
- F. Methods to record data and results. [DOE/RW-0333P 11.2.1.F]
- G. Provisions for ensuring that prerequisites for the given test have been met. [DOE/RW-0333P 11.2.1.G]
- H. Selection and identification of *measuring and test equipment* (see def.) based on the type, range, accuracy, and tolerance needed to accomplish the required measurements for determining conformance to specified requirements. [NQA-1-1997, Requirement 12, 200; DOE/RW-0333P 11.2.1.H]
- I. Identification of the functional *qualification* (see def.) level of personnel performing tests. [DOE/RW-0333P 11.2.1.I]

- 4.1.3.5 The type and extent of test controls applied shall be based on the functional classification, and design, technical, or operational requirements assigned to the structure, system, or component. [Company Imposed Requirement]

4.1.4 Test Procedure

- 4.1.4.1 Tests shall be performed in accordance with implementing documents that address the following requirements as applicable [DOE/RW-0333P 11.2.2.1s]:
 - A. Provisions for determining when a test is required, describing how tests are performed, and ensuring that testing is conducted by trained and appropriately qualified personnel. [DOE/RW-0333P 11.2.2.A]
 - B. Test procedures shall include or reference the test configuration and test objectives. [NQA-1-1997, Requirement 11, 300(a) 1s]

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- C. Test procedures shall also include provisions for assuring that prerequisites and suitable environmental conditions are met, adequate instrumentation is available and used, appropriate tests and equipment are used, and necessary monitoring is performed. *[NQA-1-1997, Requirement 11, 300(a) 2s; DOE/RW-0333P 11.2.2.B]*

Prerequisites shall include the following, as applicable: calibrated instruments, appropriate equipment, trained personnel, condition of test equipment and the item to be tested, suitable environmental conditions, and provisions for data acquisition. *[NQA-1-1997, Requirement 11, 300(a) 3s]*

- D. Test parameters affected by potential sources of uncertainty and error shall be identified and controlled. *[DOE/RW-0333P 11.2.2.E.1s and 11.2.2.E.2s]*

4.1.5 Use of Other Testing Documents

- 4.1.5.1 As an alternative to Subsection 4.1.4 above, appropriate sections of related documents such as American Society for Testing and Materials (ASTM) methods, supplier manuals, equipment maintenance instructions, or approved drawings or travelers with acceptance criteria can be used instead of preparing *special test* (see def.) implementing documents. If used, they shall incorporate the information directly into the approved test-implementing document, or shall be incorporated by reference in the approved test-implementing document. *[NQA-1-1997, Requirement 11, 300(b); DOE/RW-0333P 11.2.3.A and 11.2.3.A.2s]*
- 4.1.5.2 Implementing documents shall include adequate supplemental instructions as required to ensure the required quality of the testing work. *[DOE/RW-0333P 11.2.3.B]*

4.1.6 Test Results

- 4.1.6.1 Test results shall be documented and their conformance with test requirements and acceptance criteria shall be evaluated by a responsible authority. *[NQA-1-1997, Requirement 11, 100 3s and 500 1s; DOE/RW-0333P 11.2.4.A]*
- 4.1.6.2 Test results for design qualification tests and software design verification shall be evaluated by the responsible design organization. *[NQA-1-1997, Requirement 11, 500 2s]*

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- 4.1.6.3 The test status of an item shall be identified in accordance with PRD-5085, 14.1 Inspection, Test, and Operating Status.
[DOE/RW-0333P 11.2.4.B]

4.1.7 Test Documentation

- 4.1.7.1 Test records shall be established and maintained to indicate the ability of the item to satisfactorily perform its intended function or to meet its documented requirements. *[NQA-1-1997, Requirement 11, 600]*
- 4.1.7.2 Test documentation shall identify the *[DOE/RW-0333P 11.2.5]*:
- A. Item or work product tested. *[DOE/RW-0333P 11.2.5.A]*
 - B. Date of the test. *[DOE/RW-0333P 11.2.5.B]*
 - C. Name of the tester and data recorders. *[DOE/RW-0333P 11.2.5.C]*
 - D. Type of observation and method of testing.
[DOE/RW-0333P 11.2.5.D]
 - E. Identification of test criteria or reference documents used to determine acceptance. *[DOE/RW-0333P 11.2.5.E]*
 - F. Results and acceptability of the test. *[DOE/RW-0333P 11.2.5.F]*
 - G. Actions taken in connection with any nonconformances noted.
[DOE/RW-0333P 11.2.5.G]
 - H. Name of the person evaluating the test results.
[DOE/RW-0333P 11.2.5.H]
 - I. Identification of the measuring and test equipment used during the test, including the identification number and the most recent calibrated date. *[DOE/RW-0333P 11.2.5.I]*

4.1.8 Qualification of Test Personnel

- 4.1.8.1 Personnel who perform testing shall be qualified in accordance with PRD-5081, 10.1 Inspection, and PRD-5072, 2.2 Personnel Training and Qualification. *[DOE/RW-0333P 11.2.6]*
- 4.1.8.2 Qualifications of personnel who operate the systems/subsystems during testing shall be controlled in accordance with the requirements for qualification of facility operators. *[Company Imposed Requirement]*

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- 4.1.8.3 Test engineers and other personnel who prepare and direct testing activities shall meet the qualification requirements in PRD-5072, 2.2 Personnel Training Qualification, Subsection 4.1.1, 4.1.2, and 4.1.3. *[Company Imposed Requirement]*

4.1.9 Records

- 4.1.9.1 All records designated in implementing documents as *quality assurance records* (see def.) shall be controlled in accordance with PRD-5088, 17.1 Quality Assurance Records. *[Summary of records requirements from NQA-1-1997, DOE/RW-0333P, and Company Imposed Requirements]*

5. DEFINITIONS

Refer to LST-199, Definitions, in the QA PRD Manual for the definitions of the following terms:

acceptance criteria

acceptance test

approval

characteristics

configuration

deficiency

design input

item

measuring and test equipment

nonconformance

qualification (personnel)

qualification testing

quality assurance record

special test

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test

verification

verify

6. REFERENCES

ASME NQA-1-1997, Quality Assurance Requirements for Nuclear Facility Application

DOE/RW-0333P, Office of Civilian Radioactive Waste Management, Quality Assurance Requirements and Description, Revision 10

7. APPENDICES

Appendix A, 11.1 Basis

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APPENDIX A

11.1 BASIS

Source	Citation	Requirement	Comments
ASME NQA-1-1997, Quality Assurance Requirements for Nuclear Facility Applications, Requirement 11	100 1s	4.1.1.1	Consensus Requirement (CR)
NQA-1-1997, Requirement 11	100 2s	4.1.3.4.C	CR
NQA-1-1997, Requirement 11	100 3s and 500 1s	4.1.6.1	CR
DOE/RW-0333P	11.2.2.E.1s and 11.2.2.E.2s	4.1.4.1.C	CR
NQA-1-1997, Requirement 11	200(a) 1s	4.1.2.1	CR
NQA-1-1997, Requirement 11	200(a) 2s	4.1.1.2	CR
NQA-1-1997, Requirement 11	200(a) 3s	4.1.3.4.D	CR
NQA-1-1997, Requirement 11	200(a) 4s	4.1.2.4	CR
NQA-1-1997, Requirement 11	200(b)	4.1.2.2	CR
NQA-1-1997, Requirement 11	200(c)	4.1.2.3	CR
NQA-1-1997, Requirement 11	300(a) 1s	4.1.4.1.B	CR
NQA-1-1997, Requirement 11	300(a) 2s and 300(a) 3s	4.1.4.1.C	CR
NQA-1-1997, Requirement 11	300(b)	4.1.5.1	CR
NQA-1-1997, Requirement 11	500 2s	4.1.6.2	CR
NQA-1-1997, Requirement 11	600	4.1.7.1	CR
NQA-1-1997, Requirement 12	200	4.1.3.4.H	CR
Company Imposed Requirement	N/A	4.1.3.1	Company Imposed Requirement (CIR)
Company Imposed Requirement	N/A	4.1.3.2	CIR
Company Imposed Requirement	N/A	4.1.3.3	CIR
Company Imposed Requirement	N/A	4.1.3.5	CIR
Company Imposed Requirement	N/A	4.1.8.2	CIR
Company Imposed Requirement	N/A	4.1.8.3	CIR
DOE/RW-0333P, Office of Civilian Radioactive Waste Management Program, Quality Assurance Requirements and Description, Revision 10	11.2.1.1s	4.1.3.4	CR
DOE/RW-0333P	11.2.1.A	4.1.3.4.A	CR
DOE/RW-0333P	11.2.1.B	4.1.3.4.B	CR
DOE/RW-0333P	11.2.1.C	4.1.3.4.C	CR
DOE/RW-0333P	11.2.1.D	4.1.3.4.D	CR
DOE/RW-0333P	11.2.1.E	4.1.3.4.E	CR
DOE/RW-0333P	11.2.1.F	4.1.3.4.F	CR
DOE/RW-0333P	11.2.1.G	4.1.3.4.G	CR

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APPENDIX A

11.1 BASIS

Source	Citation	Requirement	Comments
DOE/RW-0333P	11.2.1.H	4.1.3.4.H	CR
DOE/RW-0333P	11.2.1.I	4.1.3.4.I	CR
DOE/RW-0333P	11.2.2.1s	4.1.4.1	CR
DOE/RW-0333P	11.2.2.A	4.1.4.1.A	CR
DOE/RW-0333P	11.2.2.B	4.1.4.1.C	CR
DOE/RW-0333P	11.2.2.C	4.1.2.1	CR
DOE/RW-0333P	11.2.2.D	4.1.2.2	CR
DOE/RW-0333P	11.2.3.A and 11.2.3.A.2s	4.1.5.1	CR
DOE/RW-0333P	11.2.3.B	4.1.5.2	CR
DOE/RW-0333P	11.2.4.A	4.1.6.1	CR
DOE/RW-0333P	11.2.4.B	4.1.6.3	CR
DOE/RW-0333P	11.2.5	4.1.7.2	CR
DOE/RW-0333P	11.2.5.A	4.1.7.2.A	CR
DOE/RW-0333P	11.2.5.B	4.1.7.2.B	CR
DOE/RW-0333P	11.2.5.C	4.1.7.2.C	CR
DOE/RW-0333P	11.2.5.D	4.1.7.2.D	CR
DOE/RW-0333P	11.2.5.E	4.1.7.2.E	CR
DOE/RW-0333P	11.2.5.F	4.1.7.2.F	CR
DOE/RW-0333P	11.2.5.G	4.1.7.2.G	CR
DOE/RW-0333P	11.2.5.H	4.1.7.2.H	CR
DOE/RW-0333P	11.2.5.I	4.1.7.2.I	CR
DOE/RW-0333P	11.2.6	4.1.8.1	CR
QA PRD 17.1, Quality Assurance Records	All	4.1.9	Summary of records requirements from NQA-1-1997, DOE/RW-0333P, and Company Imposed Requirements